

Leverages

Meaning of Leverage

In financial management, the term 'leverage' is used to describe the ability of a firm in employing long-term funds having a fixed cost to enhance the return to its owners i.e. equity shareholders.

James C. Vanhorne has defined leverage as "The employment of an asset or sources of funds for which the firm has to pay a fixed cost or fixed return". Thus, according to him leverage results because of the firm employing an asset or source of funds which has a fixed cost or fixed rate of return irrespective of the level of sales or the level of operating profit earned. The presence of fixed cost has considerable influence on the earnings available to equity shareholders when the volume of output or sales is increased. ✓

Total cost of a firm is divided into two categories :

- (i) Variable Costs, and
- (ii) Fixed Costs.

Variable cost varies proportionately with the volume of sales whereas fixed cost remains constant. Hence when volume of sales is increased, total cost (i.e. variable cost plus fixed cost) increase at a lower rate than the rate of increase in sales. Larger the presence of fixed costs higher is the leverage. If a firm is not required to pay fixed costs or fixed return, there will be no leverage.

A high degree of leverage implies that there will be a large change in earnings due to a relatively small change in sales and vice versa. However, a higher leverage obviously implies higher outside borrowings and hence riskier if the sales of the firm take a sudden dip. Thus, higher the degree of leverage, higher is the risk and higher is the return to equity shareholders.

Types of Leverages

Leverage is of three types :-

- (i) Operating Leverage, ✓
- (ii) Financial Leverage, ✓
- (iii) Combined Leverage.

(i) Operating Leverage : Operating leverage may be defined as the tendency of the operating profit to vary disproportionately with the volume of sales. It occurs when a firm has fixed costs that must be paid regardless of volume of sales. In other words, with fixed costs, the percentage change in operating profits is greater than the percentage change in sales. This tendency is called operating leverage. The degree of operating leverage depends upon the proportion of fixed costs as compared to variable
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costs. If the proportion of fixed costs is higher than the variable costs, it will have a higher degree of operating leverage. On the other hand, if the proportion of fixed costs is lower than the variable costs, it will have a lower operating leverage. In case of higher degree of operating leverage, the operating profits will increase at a higher rate as compared to the rate of increase in sales and vice versa.

Computation :

The operating leverage can be calculated as :-

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{Operating Profit.}} \quad \text{con EBIT?}$$

$$\text{Contribution} = \text{Sales} - \text{Variable Cost}$$

$$\text{Operating Profit} = \text{Sales} - \text{Variable Cost} - \text{Fixed Cost}$$

Operating profit here means "Earnings before interest and tax" (EBIT).

Operating leverage may be favourable or unfavourable. It will be favourable when contribution (i.e. sales less variable cost) exceeds the fixed cost and it will be unfavourable when contribution is lower than the fixed cost.

Degree of Operating Leverage :

The degree of operating leverage may be defined as the percentage change in operating profits resulting from a percentage change in sales.

$$\text{Degree of Operating Leverage} = \frac{\text{Percentage Change in Operating Profits}}{\text{Percentage Change in Sales}}$$

The concept of operating leverage can be illustrated with the help of the following illustration :

ILLUSTRATION 1.

Following information is given to you :

Sales	800 units
Selling price per unit	₹10
Variable cost per unit	₹6

Calculate operating leverage under the following situations :

Situation A When fixed costs are ₹1,200

Situation B When fixed costs are ₹1,800

Situation C When fixed costs are ₹2,400

SOLUTION : STATEMENT SHOWING OPERATING LEVERAGE

	Situation A	Situation B	Situation C
	₹	₹	₹
Sales (800 units @ ₹10 per unit)	8,000	8,000	8,000
Less Variable Cost (800 units @ ₹6 per unit)	4,800	4,800	4,800
Contribution	3,200	3,200	3,200

	1,200	1,800	2,400
	2,000	1,400	800
	3,200	3,200	3,200
	2,000	1,400	800
Operating Leverage = $\frac{\text{Contribution}}{\text{Operating Profit}}$	= 1.6	2.29	4

The above illustration shows that the degree of operating leverage increases with every increase in the proportion of fixed cost. For example, in situation C Operating leverage of 4 means that % increase in operating profit is 4 times that of % increase in sales. This can be verified by taking situation C when sales increase to 1,600 units, the profit in such a case will be :

Sales (1,600 units @ ₹10 per unit)	₹
Less : Variable Cost (1,600 units @ ₹6 per unit)	16,000
Contribution	9,600
Less : Fixed Cost	6,400
Operating Profit	2,400
	4,000

Thus when sales have increased from ₹8,000 to ₹16,000 i.e., 100% increase, the operating profits have increased from ₹800 to ₹4,000 i.e., by ₹3,200 resulting an increase of $\frac{3,200}{800} = 4$ or 400%. Thus it has been verified that 100% increase in sales has resulted in 400% increase in profits. The degree of operating leverage may, therefore, be expressed as follows :

$$\begin{aligned} \text{Degree of Operating Leverage} &= \frac{\text{Percentage Change in Operating Profits}}{\text{Percentage Change in Sales}} \\ &= \frac{400\%}{100\%} = 4 \checkmark \end{aligned}$$

Implications of Operating Leverage :

It can be said that higher is the operating leverage, higher will be the fluctuations in the operating profit as a result of change in sales. In case of high leverage, if the sales increases, operating profits will increase more than proportionately. On the other hand, if the sales decline, the operating profits will decline more than proportionately. Thus high leverage means exceptionally large operating profits in case of exceptionally large sales and exceptionally large losses in case of large decline in sales.

Significance of Operating Leverage :

The analysis of degree of operating leverage helps the financial management in making a number of financial decisions as follows :

(i) **Selection of an appropriate technology of production :** A firm with an automated production technology has to make large investment in fixed assets. As a result, its fixed costs and consequently operating leverage will be higher. On the other hand, if a firm employs labour intensive technology, the investment in fixed assets will be lesser and hence, its operating leverage will be lower. The financial manager has to

make a choice between high operating leverage (i.e., automated production technology) or low operating leverage (i.e., labour intensive technology).

Choice between the two depends upon the behaviour of the sales volume of the firm in future. If the firm expects large volume of sales, it would be better to operate under high operating leverage and consequently the firm would choose automated production technology. On the other hand, if the firm expects lower sales volume, it should have lower operating leverage and the firm should choose labour intensive technology of production.

(ii) **Fixation of Selling Price** : A firm with high operating leverage may sell its products at reduced prices because of presence of lower variable cost per unit. Reduction in prices leads to increase in the number of units sold which will adequately compensate the decline in profits due to decrease in selling prices. As a result, the profit of the firm will increase inspite of decrease in selling prices.

(iii) **Useful in understanding the Change in Operating profit** : Analysis of operating leverage is useful to the financial manager in understanding the impact of change in sales on the level of operating profits of the firm. A firm having high operating leverage will have magnified effect on operating profits for even a small change in sales level. Higher operating leverage can dramatically result in increase in operating profits whereas a decline in sales may result in disappearance of operating profits and even give place to operating loss.

(iv) **Measurement of Business Risk** : Degree of operating leverage is helpful in the assessment of business risk of a firm. Business risk is related to fluctuation in the operating profits. The higher the degree of operating leverage, the greater will be the fluctuations in the operating profits as a result of change in sales volume. Thus, higher degree of operating leverage implies higher business risk and vice versa.

Therefore, a firm should always try to avoid operating under high operating leverage because it is a high risk situation and even a small decline in sales can excessively reduce its operating profits. On the other hand, a firm should try to operate at a level where chances of loss due to decline in sales are minimized.

(ii) FINANCIAL LEVERAGE :

Financial leverage arises on account of existence of fixed interest or fixed preference dividend bearing securities in the total capital structure of the firm. In other words, financial leverage is created on account of raising of capital from those sources on which fixed return has to be paid, such as debt and preference capital along with owner's equity in the capital structure. The fixed return or fixed charges payable on debt or preference capital do not vary with the earnings before interest and taxes (EBIT). They are to be paid regardless of the amount of EBIT. After paying fixed charges out of EBIT, the residual net income belongs to ordinary shareholders.

Financial leverage may be defined as the tendency of the residual net income to vary disproportionately with EBIT. In other words, the financial leverage indicates the change that takes place in the residual net income as a result of change in EBIT. The ratio is expressed as follows:

$$\text{Financial Leverage} = \frac{\text{Earning before interest \& tax (EBIT)}}{\text{Earning before tax (EBT)}}$$

$$\text{EBT} = \text{EBIT} - \text{Fixed Interest Charges}^{(1)}$$

Favourable and unfavourable financial leverage : Financial leverage may be favourable or unfavourable depending upon whether the earnings made by the use of fixed cost securities exceed the fixed cost which the firm has to pay on them. For example, if a company borrows ₹100 at 10% interest p.a., and earns a return of 12%, the leverage will be considered favourable. Unfavourable or negative leverage occurs when the firm does not earn as much as the cost of debt. Favourable financial leverage is also known as trading on equity.

ILLUSTRATION : 2.

Calculate financial leverage in the following case :

	₹
Sales	1,50,000
Less : Variable Expenses	50,000
Contribution	1,00,000
Less : Fixed Cost	20,000
Operating Profit or Earning before interest and tax (EBIT)	80,000
Less : Interest on Debt	40,000
Earning before tax (EBT)	40,000

SOLUTION :

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{80,000}{40,000} = 2$$

Financial leverage of 2 indicates that every 1% change in EBIT will result in 2% change in EBT. For example, in the above case if EBIT increases by 50%, impact on EBT will be as follows :

	₹
EBIT (after 50% increase) $80,000 \times \frac{150}{100}$	1,20,000
Less : Interest on Debt	40,000
EBT	80,000

EBT has increased from ₹40,000 to ₹80,000 i.e., 100% increase. Thus financial leverage of 2 implies that 50% increase in EBIT has resulted in 100% increase in EBT.

Degree of Financial Leverage :

It may be defined as percentage change in earning per share (EPS) that results from a given percentage change in earnings before interest and tax (EBIT). It is calculated as follows :

$$\text{Degree of Financial Leverage} = \frac{\text{Percentage Change in EPS}}{\text{Percentage Change in EBIT}}$$

(1) Effect of preference dividend on financial leverage is discussed separately later in this

(1) **Understanding Changes in Earning before Tax (EBT) :** Financial leverage helps in understanding the changes in Earning before Tax (EBT) as a result of changes in Earning before interest and tax (EBIT). For example, financial leverage of 2 means 50% increase/decrease in EBIT will result in 100% increase/decrease in EBT.

(2) **Planning of Capital Structure for the Firm :** The capital structure is concerned with the raising of long term funds, both from fixed cost funds and equity capital. Financial leverage helps the finance manager in devising an appropriate ratio between fixed cost funds and equity share capital. A high financial leverage means high financial costs and high financial risk. A finance manager must plan the capital structure in a way that the firm is in a position to meet its fixed financial costs.

(3) **Measurement of Financial Risk :** Financial leverage helps in measuring financial risk. High financial leverage implies high fixed financial costs and thus high financial risk and low financial leverage implies low fixed financial costs and low financial risk. The financial risk refers to the risk of the firm not being able to cover its fixed financial costs. If the firm cannot pay the fixed financial costs, it can be forced into liquidation.

(4) **Profit Planning :** Earning per share (EPS) is affected by the degree of financial leverage. High financial leverage can increase the EPS of a firm if the earning before interest and tax (EBIT) is expected to increase in future. On the contrary, if EBIT is likely to decrease in future, the EPS would decline at a much faster rate as compared to the rate of decline in EBIT. Hence, by studying the relationship between EBIT and EPS changes, the firm can plan about the behaviour of EPS in future.

Limitations of Financial Leverage/Trading on Equity :

(i) **Double-edged Weapon :** Financial leverage is a double-edged weapon. It can be successfully employed only when the rate of earnings of the firm exceeds the rate of interest or preference dividend. For example, if a firm borrows ₹100 at 9% interest p.a., and earns a return of 12%, the balance of ₹3 p.a. will belong to the equity shareholders resulting in increase in earning per share (EPS). However, if the firm could earn a return of only 6% on ₹100 employed by it, the equity shareholder's loss would be ₹3 p.a. resulting in a decline in EPS.

(ii) **Increase in Risk and Rate of Interest :** Every rupee of extra debt goes on increasing the risk of the business and hence the rate of interest on subsequent borrowings also goes on increasing because subsequent lenders will demand higher rate of interest.

(iii) **Harmful in Case of Fluctuation in Earnings :** High Financial leverage is beneficial only to the firms having regular and stable earnings. The reason is that interest on borrowings is a fixed burden on the firm and in case the earnings fall, the firm may not be in a position to meet its fixed interest burden.

(iv) **Restrictions from Financial Institutions :** Financial institutions which have lent money to the firm may impose restrictions on the firm if it resorts to excessive financial leverage. The restrictions are imposed because of increased risk and to maintain a balance in capital structure of the firm.

(iii) COMBINED OR COMPOSITE LEVERAGE

As explained, operating leverage measures the effect of change in sales level on the EBIT level. Thus, it explains the degree of business risk complexion the firm. Financial leverage measures change in earning before tax (EBT) on account of change in operating profits (i.e., EBIT). Thus, it explains the degree of financial risk. Both these leverages are closely concerned with the firm's capability of meeting its fixed costs (both operating and financial). In case both the leverages are combined, the result will depict the effect of change in sales level on the earning before tax (EBT).

Therefore, combined leverage depicts the relationship between revenue on account of sales (i.e., contribution or sales less variable cost) and the earning before tax. In other words, it reveals the change in earning before tax on account of change in contribution. It may be calculated as follows :

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{Earning before tax (EBT)}}$$

OR

$$\text{Combined Leverage} = \text{Operating Leverage} \times \text{Financial Leverage}$$

Degree of Combined Leverage may be calculated as follows :

$$\text{Degree of Combined Leverage} = \frac{\text{Percentage Change in EPS}}{\text{Percentage Change in Sales}} \quad \checkmark$$

Significance of Combined Leverage :

- (i) **Understanding Changes in EPS :** Combined leverage explains the combined effect of operating leverage and financial leverage of a firm on its earnings per share (EPS). Thus, it explains the changes in EPS on account of changes in sales.
- (ii) **Assessment of Total Risk :** Combined leverage helps us in ascertaining the overall risk assumed by the firm. It depicts a combined effect of operating risk and financial risk on the EPS of the firm.
- (iii) **Helpful in Establishing a Proper Combination of Operating and Financial Leverage :** A high degree of operating leverage together with a high degree of financial leverage makes the position of the firm very risky. High operating leverage results from employing the assets for which it has to pay higher fixed costs and high financial leverage results from the use of large amount of debt capital. In order to keep the overall risk under manageable limits, the firm will have to strive a proper combination of operating and financial leverage. For this purpose, a firm which has assumed high operating leverage should employ lower financial leverage and on the other hand, a firm which has assumed lower operating leverage can afford to employ a higher degree of financial leverage.

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